

SEQUENCE LISTING

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<120> Hepatitis C Virus NS3 Helicase Subdomain I

<130> ID01152 US

<140> US 09/825,423

<141> 2001-04-03

<150> US 60/194,419

<151> 2000-04-04

<160> 17

<170> PatentIn Ver. 2.1

<210> 1

<211> 631

<212> PRT

<213> Hepatitis C virus

<400> 1

Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly Cys  
1 5 10 15

Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu  
20 25 30

Val Gln Ile Val Ser Thr Ala Thr Gln Thr Phe Leu Ala Thr Cys Ile  
35 40 45

Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile  
50 55 60

Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp Gln  
65 70 75 80

Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro  
85 90 95

Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp  
100 105 110

Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser  
115 120 125

Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu

130		135		140
Cys Pro Ala Gly His Ala Val Gly Leu Phe Arg Ala Ala Val Cys Thr				
145		150	155	160
Arg Gly Val Thr Lys Ala Val Asp Phe Ile Pro Val Glu Asn Leu Glu				
	165		170	175
Thr Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala				
	180		185	190
Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser				
	195	200	205	
Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys				
210		215	220	
Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala				
225		230	235	240
Tyr Met Ser Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr Gly Val				
	245	250		255
Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys				
	260	265		270
Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile				
	275	280	285	
Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly				
290		295	300	
Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu				
305		310	315	320
Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile				
	325	330		335
Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys				
	340	345		350
Ala Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys				
	355	360		365
His Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu				
370		375	380	
Gly Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile				
385		390	395	400
Pro Thr Asn Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr				
	405		410	415
Gly Phe Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val				
	420	425		430

Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr  
 435 440 445  
 Thr Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg  
 450 455 460  
 Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu  
 465 470 475 480  
 Arg Pro Ser Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp  
 485 490 495  
 Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val Arg  
 500 505 510  
 Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His  
 515 520 525  
 Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp Ala  
 530 535 540  
 His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Phe Pro Tyr Leu  
 545 550 555 560  
 Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro  
 565 570 575  
 Ser Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu  
 580 585 590  
 His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu  
 595 600 605  
 Val Thr Leu Thr His Pro Ile Thr Lys Tyr Ile Met Thr Cys Met Ser  
 610 615 620  
 Ala Asp Leu Glu Val Val Thr  
 625 630

<210> 2

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus peptide

<400> 2

Ser Asp Gly Lys

1

<210> 3

<211> 148  
 <212> PRT  
 <213> Hepatitis C virus

<400> 3  
 Gly Ser His Met Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala  
           1                  5                  10                  15  
 Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser  
                   20                  25                  30  
 Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys  
                   35                  40                  45  
 Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala  
           50                  55                  60  
 Tyr Met Ser Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr Gly Val  
           65                  70                  75                  80  
 Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys  
                   85                  90                  95  
 Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile  
                   100                  105                  110  
 Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly  
           115                  120                  125  
 Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu  
           130                  135                  140  
 Ala Thr Ala Thr  
 145

<210> 4  
 <211> 142  
 <212> PRT  
 <213> Hepatitis C virus

<400> 4  
 Gly Ser His Met Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu  
           1                  5                  10                  15  
 Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile  
                   20                  25                  30  
 Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser  
           35                  40                  45  
 Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile  
           50                  55                  60  
 Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr

65					70						75			80	
Asn	Gly	Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr	Gly	Phe
				85					90					95	
Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Ser	Asp	Gly	Lys
			100					105					110		
Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr	Gly	Arg
		115					120					125			
Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg		
	130					135					140				

<210> 5  
 <211> 288  
 <212> PRT  
 <213> Hepatitis C virus

<400> 5

Gly	Ser	His	Met	Ser	Pro	Val	Phe	Thr	Asp	Asn	Ser	Ser	Pro	Pro	Ala
1				5					10					15	
Val	Pro	Gln	Ser	Phe	Gln	Val	Ala	His	Leu	His	Ala	Pro	Thr	Gly	Ser
			20					25					30		
Gly	Lys	Ser	Thr	Lys	Val	Pro	Ala	Ala	Tyr	Ala	Ala	Gln	Gly	Tyr	Lys
		35					40					45			
Val	Leu	Val	Leu	Asn	Pro	Ser	Val	Ala	Ala	Thr	Leu	Gly	Phe	Gly	Ala
	50					55					60				
Tyr	Met	Ser	Lys	Ala	His	Gly	Val	Asp	Pro	Asn	Ile	Arg	Thr	Gly	Val
65					70					75					80
Arg	Thr	Ile	Thr	Thr	Gly	Ser	Pro	Ile	Thr	Tyr	Ser	Thr	Tyr	Gly	Lys
				85					90					95	
Phe	Leu	Ala	Asp	Gly	Gly	Cys	Ser	Gly	Gly	Ala	Tyr	Asp	Ile	Ile	Ile
			100					105					110		
Cys	Asp	Glu	Cys	His	Ser	Thr	Asp	Ala	Thr	Ser	Ile	Leu	Gly	Ile	Gly
		115					120					125			
Thr	Val	Leu	Asp	Gln	Ala	Glu	Thr	Ala	Gly	Ala	Arg	Leu	Val	Val	Leu
		130				135					140				
Ala	Thr	Ala	Thr	Pro	Pro	Gly	Ser	Val	Thr	Val	Pro	His	Pro	Asn	Ile
145					150					155					160
Glu	Glu	Val	Ala	Leu	Ser	Thr	Thr	Gly	Glu	Ile	Pro	Phe	Tyr	Gly	Lys
			165					170						175	
Ala	Ile	Pro	Leu	Glu	Val	Ile	Lys	Gly	Gly	Arg	His	Leu	Ile	Phe	Cys

	180		185		190										
His	Ser	Lys	Lys	Lys	Cys	Asp	Glu	Leu	Ala	Ala	Lys	Leu	Val	Ala	Leu
		195					200					205			
Gly	Ile	Asn	Ala	Val	Ala	Tyr	Tyr	Arg	Gly	Leu	Asp	Val	Ser	Val	Ile
	210					215					220				
Pro	Thr	Asn	Gly	Asp	Val	Val	Val	Val	Ala	Thr	Asp	Ala	Leu	Met	Thr
	225				230					235				240	
Gly	Phe	Thr	Gly	Asp	Phe	Asp	Ser	Val	Ile	Asp	Cys	Asn	Thr	Ser	Asp
				245					250					255	
Gly	Lys	Pro	Gln	Asp	Ala	Val	Ser	Arg	Thr	Gln	Arg	Arg	Gly	Arg	Thr
			260					265					270		
Gly	Arg	Gly	Lys	Pro	Gly	Ile	Tyr	Arg	Phe	Val	Ala	Pro	Gly	Glu	Arg
	275						280					285			

<210> 6  
 <211> 241  
 <212> PRT  
 <213> Hepatitis C virus

<400> 6  
 Gly Ser His Met Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala  
 1 5 10 15  
 Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser  
 20 25 30  
 Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys  
 35 40 45  
 Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala  
 50 55 60  
 Tyr Met Ser Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr Gly Val  
 65 70 75 80  
 Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys  
 85 90 95  
 Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile  
 100 105 110  
 Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly  
 115 120 125  
 Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu

130		135		140
Ala Thr Ala Thr Pro Pro Gly Ser Gly Met Phe Asp Ser Ser Val Leu				
145		150		155
Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala				
	165		170	175
Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro				
	180		185	190
Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu				
	195		200	205
Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu				
	210		215	220
Asn Phe Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala				
	225		230	235
				240

Gln

<210> 7

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus peptide

<400> 7

Gln Gly Gly Ala

1

<210> 8

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus peptide

<400> 8

Arg Gly Ser Thr

1

<210> 9

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus peptide

<400> 9

Arg Gly Pro Gly

1

<210> 10

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus peptide

<400> 10

Ser Lys Gly Glu

1

<210> 11

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus peptide

<400> 11

Glu Gln Gly Ala

1

<210> 12

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus peptide

<400> 12

Arg Asn Asn Gln

1

<210> 13

<211> 4

<212> PRT



<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus peptide

<400> 13

Ala Asp Gly Ser

1

<210> 14

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus peptide

<400> 14

Cys Asp Gly Leu

1

<210> 15

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus primer

<400> 15

atcaggaccg ggggtggaaac aattaccact ggc

33

<210> 16

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutated Hepatitis C virus primer

<400> 16

gccagtggta attgtttcca ccccggtcct gat

33

<210> 17

<211> 144

<212> PRT

<213> Hepatitis C virus

<400> 3

Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln Ser

## 10

1	5	10	15
Phe Gln Val	Ala His Leu His	Ala Pro Thr Gly Ser Gly	Lys Ser Thr
	20	25	30
Lys Val Pro	Ala Ala Tyr Ala	Ala Gln Gly Tyr Lys	Val Leu Val Leu
	35	40	45
Asn Pro Ser	Val Ala Ala Thr	Leu Gly Phe Gly	Ala Tyr Met Ser Lys
	50	55	60
Ala His Gly	Val Asp Pro Asn	Ile Arg Thr Gly	Val Arg Thr Ile Thr
	65	70	75
Thr Gly Ser	Pro Ile Thr Tyr	Ser Thr Tyr Gly	Lys Phe Leu Ala Asp
	85	90	95
Gly Gly Cys	Ser Gly Gly Ala	Tyr Asp Ile Ile	Ile Cys Asp Glu Cys
	100	105	110
His Ser Thr	Asp Ala Thr Ser	Ile Leu Gly Ile	Gly Thr Val Leu Asp
	115	120	125
Gln Ala Glu	Thr Ala Gly Ala	Arg Leu Val Val	Leu Ala Thr Ala Thr
	130	135	140